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PLAGUE-PREVENTION.

REPORT OF WORK IN MOBILE, ALA., DURING AUGUST AND SEPTEMBER, 1914.

By S. C. GRUBBS, Surgeon, United States Public Health Service.

Owing to the appearance of bubonic plague in New Orleans this summer, the health authorities and business organizations of Mobile, Ala., decided to assure themselves that their city was not infected with rat plague and to take steps to insure themselves against the entrance and spread of the disease. The United States Public Health Service was requested to send an officer to advise them and to assist in the work of rat eradication. The writer was detailed for the purpose and arrived in Mobile on August 20, and remained there until October 1.

The following work had been done previous to his arrival:

A force of eight rat catchers with one foreman was at work on the water front and in the wholesale district adjoining. The foreman had been sent to New Orleans for instruction, was a practical man, and the results obtained were good. All rats caught were being examined at the Medical College by the city bacteriologist, who had also made a visit to New Orleans to familiarize himself with the service laboratory methods.

It had been agreed, also, to enforce rat proofing in that section of Mobile that lies east of Royal Street and the extensions thereof, and an ordinance to that effect had been drawn up. Royal Street runs in the same direction as the water front on Mobile River and is distant from it from 3 to 6 blocks. The water front is about 2 miles long and the district in question is estimated to contain 1,200 buildings, in addition to all the wharves of the city and the terminals of the railroads.

Public sentiment was considerably aroused but very much divided. While one faction demanded immediate and radical action and believed the danger serious, the other extreme deprecated the agitation, claiming that the danger was small and that the publicity given the danger from plague would hurt business. It was very evident, however, that those favoring action were making headway and had convinced the city authorities that something should be done.

Certain protective measures were being enforced with vessels, both foreign and local, namely: Rat guards were required on all lines, vessels had to be fended off 8 feet, and skids and gangways had to be removed when not in use. These measures were and are still being enforced by a medical inspector and one guard.

The following work was done under my direction:

Rat Catching and Extermination.

Few changes were made under this head, as the work was satisfactory. The rat catchers were divided into two squads of four men each with a foreman; accurate records of each man's work were begun with a daily summary to be filled in at the office. Poisoning was begun, especially along the wharves, about 300 poisons per day being put out. A bonus of 4 cents per rat for all over 250 rats caught each month was given each trapper, beginning with September, and 1 cent per rat to each foreman for all over 1,000 caught by his squad.

Although the trapping was confined to the district east of Royal Street the catch continued to be satisfactory and the men worked with enthusiasm. During the month of September 2,392 rats were caught, of which 2,284 were examined at the laboratory.

The efficiency of this branch of the work was increased by placing it under the more immediate supervision of the medical inspector of the water front and by using the services for 10 days of one of the experienced men from New Orleans, who was released for that period in order that he might come to Mobile.

Rat-Proofing Ordinances.

The plan of rat proofing that section of Mobile east of Royal Street was indorsed and after one general meeting the ordinance, already drawn up, was passed by the city commissioners. It was found, however, that a considerable number of conditions likely to arise had not been covered and that the enforcement of the ordinance would be difficult as it stood, so it was thought best to rewrite it "in toto." After this was done the new ordinance¹ was submitted to three of the service officers on plague duty in New Orleans and to the Mobile city attorney, and was then passed without change as a substitute for the previous ordinance. In general it provides for the absolute rat proofing of all buildings east of Royal Street, and that all new buildings or substantial repairs in any part of the city shall be of rat-proof construction. It prescribes in detail how rat proofing shall be done, and has besides a general clause to cover any condition that may arise not specifically mentioned. It prescribes penalties for nonconformance and allows each day of nonconformance to be treated as a separate offense. It allows action to be taken against tenants as well as owners. It does not mention wharves or stables, as these were to be treated in a separate ordinance.

It had been decided that all stables should be rat proofed, and an ordinance to require the sanitary construction of stables was already

¹ Public Health Reports, Sept. 18, 1914, p. 2460.

on the statute books but had been thrown out by the courts as discriminatory and unreasonable. With this ordinance as a basis, a separate ordinance¹ was drawn requiring all stables in the city to be rat proof, fly proof, and be of sanitary construction. This was read by the commissioners without comment on September 29, 1914, and was passed October 6.

An ordinance was also recommended which would allow the city health officer to enforce the rat proofing of any building that is west of Royal Street which for any reason was a very bad rat harbor, but the commissioners decided to take no action in this direction. No ordinance was passed requiring the rat proofing of the wharves, but it was urged that careful study of the water front be made, that action be taken in regard to such wharves as were in bad condition, and that rules be drawn so that in the future only rat-proof wharves would be built. This matter is now under consideration.

An adequate garbage ordinance was already on the statute books.

Organization.

The following plan of organization was presented to the city commissioners and accepted by them:

The enforcement of the rat-proofing ordinance is to be a separate division of the health department, and the personnel is to have no other duties; the force is to consist of 1 engineer, 6 inspectors, 1 stenographer, 1 chauffeur.

The number of inspectors was afterwards reduced to four.

The cost of this work to the city, including the rat catching, was estimated at \$1,500 per month.

This plan of organization was accepted and work with inspectors was begun on August 27, 1914, but many changes had to be made before satisfactory men were found.

An office was opened in a room assigned in the board of health building and office appliances were installed at the same time. A difficult task was to find the right man for the position of engineer—so called—who was to head the rat-proofing division. After careful examination of many applicants Mr. R. P. Du Valle, a local civil engineer of ability and energy, was chosen.

Method of Procedure.

The district east of Royal Street was arbitrarily divided into eight districts for the purpose of inspection and filing of records. Inspections were begun, notes being made on 5 by 8 form cards, one for each house, which were made out on the premises. These inspections were made in detail, and the record shows the condition of every part of the property. On the reverse of each card a sketch was made

¹ Public Health Reports, Oct. 23, 1914, p. 839.

showing the outline of the ground plan and each floor. These cards are filed in the office.

It required several days of instruction and many changes in personnel before proper inspections were made and recorded, but a standard was arrived at and is being maintained.

As soon as the engineer himself became familiar with the principles of rat proofing, had devoted several days to general inspections, and had taken the regular schooling that was being given the inspectors, the following procedure was adopted, beginning September 7, on which day the rat proofing ordinance became effective:

The engineer takes with him each inspector, at a certain hour, and the two inspect one or more buildings that this inspector has already gone over. The card record previously made is taken along, and after reviewing and checking it up the engineer notes on the regular blank form of instructions what is necessary to bring the premises in conformity with the ordinance. At the office these instructions are rewritten in duplicate, initialed by the engineer, and signed by the health officer. One copy is served on the property owners, together with a copy of the ordinance, and the other copy is filed. The notice states that work must be begun within 48 hours. The inspector continues to visit each day all houses in his district regarding which notices have been served, as well as going on with new work.

New Buildings.

In order to enforce that provision of the ordinance requiring new buildings or substantial repairs to same to be rat proof in construction, a list of building permits issued is being furnished each week by the city engineer and a form letter is written to both the owner and the builder of each new building calling attention to the new requirements and inclosing a marked copy of the ordinance. In addition, the building permit is stamped "subject to the provisions of the rat-proofing ordinance of September 1, 1914." In addition to this a weekly inspection has been made of all new buildings and any work in violation of the ordinance has been stopped.

A board of three architects has been appointed to revise the building code of Mobile. The new code will prescribe rules requiring rat proofing of all new buildings as specified in the ordinance and according to the uses to which they are to be put. When this new code is effective its enforcement will be done by the city engineer.

There has been but one attempt to contest the rat-proofing ordinance and that was withdrawn after reaching court, as the defendant agreed, on advice of his attorney, to begin the prescribed work of rat proofing at once.

Publicity.

Although the county medical society, the chamber of commerce, the Rotary Club, and morning newspaper were thoroughly alive to the advisability of preparing for the possible advent of plague, and both the Surgeon General and Asst. Surg. Gen. Rucker had been invited to the city, and the people were prepared for action, it was nevertheless necessary to keep up the interest. To this end, the aid of both the Mobile Register and the Mobile Item was requested and they have printed news of the work, together with stories or advertisements practically every day. Editorially, also, the work has been encouraged in every way, and the thanks of those charged with its completion are due to both papers.

The Chamber of Commerce and Business Mens' League, through their ways and means and their public-health committees, are helping. They have sent circular letters to practically every business house in the wholesale district, asking cooperation. The Rotary Club subscribed over \$2,000 and through their public health committee placed this sum at the disposal of the Service officer.

It was suggested that these organizations should—

1. Take charge of the publicity.
2. Use their influence to stop any individual resistance to rat proofing.
3. Assist any poor person affected by the work.
4. Study any of the larger problems that might arise and use their influence for a broad, general sanitary policy.

To accomplish this the three committees each appointed two of their members to form a central committee; the six then selected a seventh, who was to be chairman. This central committee was to deal direct with the Federal and local health authorities.

In order to increase public interest and to show exactly what rat proofing means, an exhibit was made of models and drawings. Two models were half natural size and showed a ground floor corner of a building, one of wooden construction and rat infected, the other of concrete and wood but rat proof.

A small wooden cottage was made showing rat proofing by elevation, by flashing, and by blocking off double walls. This exhibit is now being shown in different store windows, together with the posters and explanations, and is attracting attention. The expense of this exhibit was borne by the Mobile Rotary Club. It will probably be added to and will be sent to the Southern Health Exhibition at Jacksonville, Fla., the last part of November.

Posters on the rat question have been put in the street cars and show windows, some comical, some instructive, and some in jingle form. Competitions for posters, compositions by school children, and for rhymes have been recommended as a part of the publicity work undertaken by the chamber of commerce.

Talks have been given before several organizations and reports of these, one in full, were published in the papers.

In this campaign the endeavor has been made to emphasize the following:

1. Rat proofing and other plague-prevention work should anticipate and not wait for actual infection.

2. Rat catching and examination are of value to assure the absence of rat plague, but otherwise not worth what they cost.

3. Rat guards, fending off of vessels, and similar measures are of temporary value only.

4. Rat proofing is the best permanent plague-prevention work that a city can do.

5. Aside from protection against plague, rat proofing pays, on account of—

- (a) Elimination of destruction of property by rats.

- (b) Decrease of repair bills on account of wood being replaced by more enduring material.

- (c) Decrease of fire insurance rates.

- (d) Increased efficiency due to trucking and similar labor on concrete floors being easier and because no delays are caused by frequent repairs.

Progress Made.

Up to October 1, 1914, the date of departure of the service representative, which was three weeks after the ordinance became effective, more than half of the 1,200 houses east of Royal Street had been inspected and the records filed; 166 buildings had been reinspected; notices specifying necessary changes had been sent; and work was under way or completed in 33 buildings.

Conclusion.

Mobile is doing pioneer work in that both the city and the property owners are spending money to protect themselves against plague before the disease has reached them.

The property owners of Mobile are meeting the expense in good spirit in spite of the "hard times," and often say that the expense is less than the benefit, aside from the plague standpoint. The slogan adopted is "Mobile has no plague and does not propose to have any." They have seen that temporary measures, especially in regard to shipping, are hard to enforce, and are a constant irritation and expense to commerce, but that permanent rat proofing, once paid for, begins to yield dividends at once in protection and repairs avoided.

Rat catching and examination are now going on in several other cities, notably in the South, but inquiry has failed to reveal any uninfected city where rat proofing has been done.

The work of creating a rat-proof zone along the water front of Mobile is proceeding in an orderly manner. It is not being pushed with the haste necessary when plague is present, but each individual is required to do his share promptly when his time comes. It will require over six months to complete the work. At the same time only rat-proof structures may be erected in other parts of the city.

When the rat proofing is complete the restrictions now placed on shipping, always unsatisfactory to all parties, may safely be withdrawn and rat catching, which is expensive, may be reduced at least 50 per cent.

Mobile has set an example that other cities may well follow.

Report of Plague-Prevention Work at Mobile, Ala., for the Week Ended October 10, 1914.

Instructions for rat proofing:		New buildings under supervision (building).....	26
Number issued to date.....	183	Rat catching and examination:	
Number issued this week.....	42	Rats caught to date.....	7,279
Work in progress:		Rats caught this week.....	513
Number of premises being rat proofed....	53	Rats examined this week.....	447
Number of premises rat proofing complete	9	Rats infected.....	None.

PLAGUE-ERADICATIVE WORK.

CALIFORNIA.

The following report of plague-eradication work in California for the week ended October 17, 1914, has been received from Surg. Long, of the United States Public Health Service, in charge of the work:

SAN FRANCISCO, CAL.		RATS TAKEN FROM STEAMERS. (NOT INCLUDED ABOVE.)	
Number of premises inspected.....	1,663	Transport <i>Thomas</i> (<i>Mus alexandrinus</i>)	5
Number of premises destroyed.....	11	(<i>Mus rattus</i>)	8
Number of nuisances abated.....	221		
Number of poisons placed.....	39,460		
Average number of traps set daily.....	1,317		
RATS COLLECTED AND EXAMINED FOR PLAGUE.		PORT COSTA, CAL.	
Collected.....	665	Number of rats trapped in sugar refinery....	21
Found dead.....	10	Number of rats trapped in warehouses.....	45
Examined.....	449	Number of rats trapped on water front.....	20
		Number of rats examined.....	59
RATS IDENTIFIED.		RATS IDENTIFIED.	
<i>Mus norvegicus</i>	347	<i>Mus norvegicus</i>	11
<i>Mus musculus</i>	87	<i>Mus musculus</i>	5
<i>Mus alexandrinus</i>	133	<i>Mus alexandrinus</i>	36
<i>Mus rattus</i>	98	<i>Mus rattus</i>	27

Record of plague infection.

Places in California.	Date of last case of human plague.	Date of last case of rat plague.	Date of last case of squirrel plague.	Total number rodents found infected since May, 1907.
Cities:				
San Francisco.....	Jan. 30, 1908	Oct. 23, 1908	None.....	398 rats.
Oakland.....	Aug. 9, 1911	Dec. 1, 1908	do.....	126 rats.
Berkeley.....	Aug. 28, 1907	None.....	do.....	None.
Los Angeles.....	Aug. 11, 1908	do.....	Aug. 21, 1908	1 squirrel.
Counties:				
Alameda (exclusive of Oakland and Berkeley).....	Sept. 24, 1909	Oct. 17, 1909 (wood rat).	Aug. 7, 1914	286 squirrels, 1 wood rat.
Contra Costa.....	May 17, 1914	None.....	Aug. 25, 1914	1,563 squirrels.
Fresno.....	None.....	do.....	Oct. 27, 1911	1 squirrel.
Merced.....	do.....	do.....	July 12, 1911	5 squirrels.
Monterey.....	do.....	do.....	Apr. 10, 1914	6 squirrels.
San Benito.....	June 4, 1913	do.....	Sept. 26, 1914	36 squirrels.
San Joaquin.....	Sept. 18, 1911	do.....	Aug. 26, 1911	18 squirrels.
San Luis Obispo.....	None.....	do.....	Jan. 29, 1910	1 squirrel.
Santa Clara.....	Aug. 31, 1910	do.....	July 23, 1913	25 squirrels.
Santa Cruz.....	None.....	do.....	May 17, 1910	3 squirrels.
Stanislaus.....	do.....	do.....	June 2, 1911	13 squirrels.